

Occasional Survey

IS THERE A FUTURE FOR
LOWER-TAR-YIELD CIGARETTES?Participants of the Fourth Scarborough Conference on Preventive
Medicine*

Summary An international workshop was held to consider whether the policy adopted in many countries to encourage the decline in cigarette tar yields was beneficial. The consensus was that the policy had been beneficial and that tar yields should be further reduced. In addition the yield of other smoke components should be reduced even in the absence of conclusive evidence of their specific toxicity. The lower-tar policy should be monitored to ensure that the concentration of smoke components (or their metabolites) in smokers declines as the yields decline. The public need to be made aware of the uncertainties of the policy with respect to its effects on the risk of diseases other than lung cancer and that the benefits from smoking lower-yield cigarettes are smaller than those derived from avoiding cigarettes altogether.

INTRODUCTION

CIGARETTE smoking is the most pressing health issue in economically developed countries. Public health policy has been directed at discouraging non-smokers from starting to smoke and encouraging smokers to stop. By the early 1980s in both the US and the UK, cigarette consumption per head had decreased. In the UK it had decreased by about 35% in men from a fairly steady maximum spanning the period 1940-75 and decreased by about 25% in women by 1976. In the US it decreased, by about 20% from a peak in 1963 (fig 1^{1,2} (and Tobacco Advisory C

Since the early 1970s, the US has recommended that people who give up smoking switch to cigarette yield, in the expectation that the smoking could be reduced.^{1,3} This to be an alternative to encourage smoking; nor was it expected that lower delivery cigarettes would be derived from stopping smoking a

Despite the decline in sales in the US and UK (fig 2),^{1,4} doubt has been expressed about whether

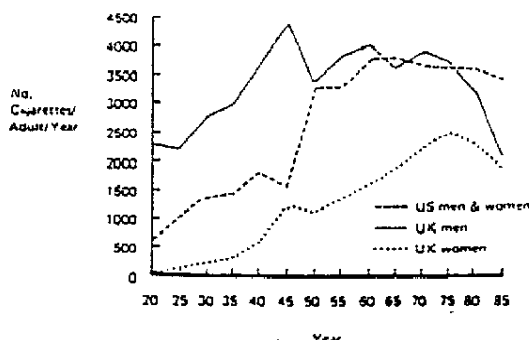


Fig 1—Annual consumption of manufactured cigarettes per adult in the USA and UK from 1929 to 1985.

(Data for men and women separately are not available for the USA.)

the lower-yield policy has been beneficial.⁵⁻⁸ In this paper, which arose from discussions at a meeting in Maine, USA, in 1984, we consider the issues surrounding the advisability of a lower-tar policy. The conclusion expressed in this paper represents the general view of the group involved but on some issues there were one or two dissensions.

HAVE LOWER-YIELD CIGARETTES BEEN OF HELP SO FAR?

Lung Cancer

The carcinogenic activity of tobacco smoke seems to reside in the tar,⁹ so it is reasonable to expect that cigarettes yielding less tar will be less likely to cause lung cancer. However, the relation may not be straightforward. One cause of uncertainty involves "compensatory" smoking—the tendency of smokers to increase the amount of smoke inhaled from a cigarette of lower tar yield and, to a lesser extent, to increase the number of cigarettes smoked. Several studies in which the intake of carbon monoxide or nicotine have been used as an indirect measure of tar exposure have found that the estimated reduction in tar intake is only about half of what might be expected from the difference in cigarette tar yields.¹⁰⁻¹¹

Prospective epidemiological studies¹²⁻¹⁴ of lung cancer show, on average, an approximate 20% reduction in risk associated with lower-tar (or filter) cigarettes compared with higher tar (or plain)—a difference that is very much what would be expected from the intake studies. Most lung cancers still occur in filter cigarette smokers who have switched from plain cigarettes, so the full effects of filter cigarettes have not yet been seen. One case-control study that has looked at lifelong filter smokers suggests that the reduction in risk may be between 30 and 40%.¹⁵

Secular trends in lung cancer mortality and cigarette consumption in Britain indicate that the lower risk of lung cancer in smokers of lower tar compared with high-tar

*Participants: N. Benowitz, M. Feinleib, C. Feyerabend, L. Garfinkel, R. Greenberg, T. Guarino, J. Haddow (Co-chairman), V. Hawthorne, S. Jones, W. Kannel, D. Kawanishi, G. Knight, L. Kozlowski, M. Kunz, J. Luroto, G. Palomaki, N. Pride, G. Rose, M. Russell, R. Seppney (Rapporteur), H. van Vunakis, N. Wald (Co-chairman), J. Wilkenfeld, E. Wynder.

S. R. PALMER AND OTHERS: REFERENCES

1. Hopp-Simpson RE. The nature of herpes simplex: A long term study and a new hypothesis. *Proc R Soc Med* 1945; 38: 9-20.
2. Thomas M, Robertson WJ. Dermal transmission of virus as a cause of shingles. *Lancet* 1971; ii: 1349-50.
3. Berlin ES, Campbell T. Hospital-acquired herpes simplex following exposure to chickenpox. *JAMA* 1970; 213: 1831-33.
4. Morera DM, Bergman DJ, West M, et al. An outbreak of varicella-zoster virus infection among cancer patients. *Ann Intern Med* 1980; 93: 414-19.
5. Eiderer F, Myers MH, Mantel N. A statistical problem in space and time: Do leukemia cases come in clusters? *Biometrics* 1964; 20: 626-36.
6. Weller TH. Varicella and herpes zoster. *N Engl J Med* 1983; 309: 1342-44.
7. Ross CAC, Brown WK, Clarke A, et al. Herpes zoster in general practice. *J R Coll Gen Pract* 1975; 25: 29-32.
8. Crodoch-Watson JE, Ridehalgh MKS, Bourne MS. Specific immunoglobulin responses after varicella and herpes zoster. *J Hyg (Camb)* 1978; 82: 319-36.
9. Weller TH. Varicella and herpes zoster. *N Engl J Med* 1983; 309: 1434-40.
10. Aron AM, Koropchak CM, Witter AE. Immunologic evidence of reinfection with varicella zoster virus. *J Infect Dis* 1983; 148: 200-05.
11. Gershon AA, Steinberg SP, Gels L. Clinical reactivation with varicella-zoster virus. *J Infect Dis* 1984; 148: 137-42.
12. Gershon AA, Steinberg SP. Cell-mediated immunity to varicella-zoster virus measured by virus neutralization: Mechanism and blocking of the reaction by specific antibody. *Infect Immun* 1979; 28: 146-49.

NOTICE
This material may be
protected by copyright
law (Title 17 U.S. Code).

Since the early 1970s, the US and UK authorities have also recommended that people who are unwilling or unable to give up smoking switch to cigarettes of low tar and nicotine yield, in the expectation that the adverse health effects of smoking could be reduced. The policy was never intended to be an alternative to encouraging smokers to give up smoking; nor was it expected that the benefits of smoking lower delivery cigarettes would be as great as those to be derived from stopping smoking altogether.

Participants of the Fourth Scarborough Conference on Preventive Medicine, Is there a future for lower-tar-yield cigarettes? The Lancet, pp. 1111-1114, 1985

While the overall aim should be towards reductions in the tar:nicotine ratio, this should not be through the enhancement nor solely through the maintenance of present-day middle range nicotine levels (around 1.3 mg/cig). In general, the sales weighted average nicotine yields should fall and on the lines of the suggestion made in our third report (para 20) there should continue to be some brands available to the public with nicotine yields below 1 mg and with tar yields reduced to a proportionately greater extent (below 8 mg).

Fourth Report of the Independent Scientific Committee on Smoking & Health, 1988

Conclusion - About a quarter of deaths from lung cancer, coronary heart disease, and possibly other smoking related diseases would have been avoided by lowering tar yield from 30 mg per cigarette to 15 mg. Reducing cigarette tar yields in Britain has had a modest effect in reducing smoking related mortality.

Tang J.L., Morris J.K., Wald N.J., Hole D., Shipley M., Tunstall-Pedoe, H. Mortality in relation to tar yield of cigarettes: a prospective study of four cohorts. *BMJ*, Vol. 311:1530-1533, 1995

There is evidence that people who smoke cigarettes which are relatively low in tar and nicotine content tend to cough less than people who smoke cigarettes which are high in tar and nicotine content. However, at this time there is no direct evidence based upon studies of man that any type of cigarette now on the market or available to be put on the market differs from other types in respect to its effect upon death rates or the occurrence of serious diseases in man. The lack of such evidence on this matter is due to the fact that it is extremely difficult to obtain. Therefore, this lack of evidence should not be taken as an indication that various types of cigarettes do not in fact differ in the degree of their harmful effects. Indeed, it seems likely that of the various brands of cigarettes now on the market, some are less harmful than others.

Continued

Hearings Before the Consumer Subcommittee of the Committee on Commerce, United States Senate, August 23, 24, & 25, 1997, Serial No. 90-52

Mortality from all smoking related diseases was 9% lower in smokers of filter cigarettes than that in smokers of plain cigarettes (95% confidence interval 1% to 17%). A decrease in tar yield of 15 mg per cigarette was associated with a 23% (10% to 35%) decrease in relative mortality. We found a 25% decrease (48% decrease to 9% increase) in relative mortality rate from lung cancer associated with a decrease in tar yield of 15 mg per cigarette, which is consistent with other studies. In the 12 years of follow up of 120,000 male cigarette smokers aged over 40, the same reduction in tar yield was associated with a 20% reduction in mortality from lung cancer.

Tang J.L., Morris J.K., Wald N.J., Hole D., Shipley M., Tunstall-Pedoe, H. Mortality in relation to tar yield of cigarettes: a prospective study of four cohorts. *BMJ*, Vol. 311:1530-1533, 1995
